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13. SUPPLEMENTARY NOTES					
14. ABSTRACT In 2009 and 2010, U.S. Air Force School of Aerospace Medicine Radiation Consulting and Air Force Safety Center personnel completed radiation contamination clearance surveys on six igloos located at Lackland AFB Medina Annex. All results were found to be below applicable action levels. This letter serves as the final radiological report for applicable structures so final disposition and permitting issues of these buildings can be determined by the Air Force Safety Center.					
15. SUBJECT TERMS Radiological contamination survey, acceptable contamination levels, uranium					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 45	19a. NAME OF RESPONSIBLE PERSON Capt Brian Shuler
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)



DEPARTMENT OF THE AIR FORCE
USAF SCHOOL OF AEROSPACE MEDICINE (AFMC)
WRIGHT-PATTERSON AFB OH

3 June 2013

MEMORANDUM FOR 37 CES/CEAN

ATTN: RESTORATION PROGRAM MANAGER
1555 GOTT STREET
LACKLAND AFB, TX 78236-5645

FROM: USAFSAM/OEC
2510 Fifth Street, Bldg 840
Wright-Patterson AFB, OH 45433-7913

SUBJECT: Consultative Letter AFRL-SA-WP-CL-2013-0004, Weapons Storage Area Survey
of 400 Series Buildings at Medina Annex, San Antonio, Texas

1. INTRODUCTION:

a. *Purpose:* The United States Air Force School of Aerospace Medicine, Occupational and Environmental Health Department, Health Physics Consulting Branch (USAFSAM/OECM), in consultation with 37 CES/CEVR and the AF Safety Center (AFSEC), performed radiological surveys in buildings 400, 402, 403, 404, 440, and 441 in 2009 and 2010. AFSEC has already issued interim guidance on these buildings; however, this letter serves as the final radiological report so final disposition and permitting issues of the buildings can be determined by AFSEC.

b. *Scope:* A description of the site history is found in Attachment 1. These buildings are on the 2009 FY demolition list, and they currently have an AFSEC 91(b) Material Radioactive Permit, which restricts demolition or construction activity unless radiological clearance is established. These surveys assessed total and removable radiological contamination on interior surfaces of the building, with the majority of the assessment being on floors. The term "total radiological contamination" refers to the sum of any fixed and removable contamination. The radiological contaminants of concern for the buildings are strictly uranium isotopes as justified in Attachment 2. For this survey, the criteria for acceptable contamination levels were determined to be 5,000 disintegrations per minute per 100 square centimeters (dpm/100 cm²) for total uranium contamination and 1,000 dpm/100 cm² for removable uranium contamination. These values are based on the U.S. Atomic Energy Commission (AEC) Regulatory Guide 1.86. This and other pertinent regulatory issues are discussed in Attachment 3.

2. SURVEY PROCEDURES AND DISCUSSION:

a. The Ludlum Model 2224 meter with a Ludlum floor monitor was used to survey accessible facility floor areas for total alpha (α) and beta (β) contamination. The Ludlum Model 2360 meter with Ludlum Model 4389 probe was also used to spot survey wall and floor surfaces in buildings for total α and β contamination. The relatively small size of the probe on this meter/probe combination compared to the floor monitor allows its use in confined areas that are difficult to survey with the floor monitor and for some small rooms where use of a floor monitor was impractical. The floor monitor, however, is more efficient for the survey of floors in large rooms due to its considerably large probe size. Floors and walls were spot checked for α and β contamination at the locations shown in Attachment 4. Scan measurements were considered significant if the individual detector reading exceeded a value above background that incorporated statistical variation and instrument uncertainty.

b. Although monitoring for α -radiation emissions is the preferred survey method for impacts of weapons materials on surfaces, β /gamma monitoring using the Ludlum floor monitor and photon monitoring with the Ludlum Model 2221 meter/FIDLER probe combination were accomplished to ensure that significant α -radiation contamination was not being masked by floor coverings (i.e., concrete sealants, etc.) or migration into pores or cracks in the concrete. For FIDLER measurements, the probe was positioned at 30 cm above the floor with a 1-minute integrated count period. All readings were within the range of background radiation measurements for the respective instrument. Due to the buildup of radon progeny in the A-structures, high in-situ α -radiation measurements were observed, as compared to those typically observed in buildings with operating ventilation systems. However, due to decay times, the swipe samples analyzed at the laboratory did not have the influence of radon progeny.

c. Removable contamination was assessed by wiping all locations that received portable instrument spot checks for α -radiation using the Ludlum Model 4389. Wipe samples were accomplished using 4.25-cm- (1.75-inch-) diameter Whatman #41 filter disks. The area wiped for each sample was approximately 100 cm². The filter papers were then counted by USAFSAM Radioanalytical Laboratory using a thin window gas proportional counter for gross beta and alpha emitting contamination and a high efficiency low background sodium iodide (NaI) detector for gross gamma emitting contamination. In total, 457 swipe samples were taken. All the areas identified as having measurements greater than or equal to 9 pCi/100 cm² were verified as containing depleted uranium and some associated decay product peaks.

d. Attachment 5 lists acceptable levels of contamination and the criteria to which these results were compared. Attachment 6 documents photographs of the survey.

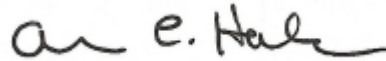
3. CONCLUSIONS AND RECOMMENDATIONS:

a. All radiological surveys in buildings 400, 402, 403, 404, 440, and 441 indicated no contamination above acceptable release criteria for uranium isotopes. While there was minor residual uranium detected, the maximum swipe analysis values were approximately one-fiftieth of the more restrictive removable criteria of 1,000 dpm/100 cm².

b. The radioactive material related to this survey is considered a 91(b) material and is solely subject to AFSEC regulation; only AFSEC can release any radiological controls on the buildings.

c. USAFSAM recommends AFSEC release buildings 400, 402, 403, 404, 440, and 441 from radiological permitting and controls.

4. Comments or questions regarding this matter can be directed to DSN 798-3320 or alan.hale@us.af.mil.

A handwritten signature in black ink, appearing to read "a. e. Hale".

ALAN C. HALE, Major, USAF, BSC
Chief, Radiation Consulting Branch

6 Attachments:

1. Site History
2. Contaminants of Concern
3. Regulatory Issues
4. Swipe Sample Diagrams, Logs, and Results
5. Acceptable Levels of Contamination
6. Site Photographs

cc:
HQ AFSEC/SEWN

Attachment 1

Site History

1. Constructed between 1953 and 1955, the AEC and the Armed Forces Special Weapons Project started using Medina Base as a weapons storage area in 1955. This site was one of 13 national and operational storage sites for nuclear weapons. In addition to the stockpiling of weapons, periodic maintenance operations were conducted at the storage sites, including Medina Base. In 1959, the mission at Medina Base was expanded to perform modification procedures and demilitarization, whereby the base was renamed the Medina Modification Center. The AEC mission at Medina Base ceased in 1966, with operations moving to the Pantex Plant, Amarillo, TX. Operations from the Clarksville, TN, and Iowa Army Ammunitions Plant were consolidated at Pantex around the same time. Since then, the facility has been operated by the Air Force.

2. Prior to 1966, the primary mission of the base was nuclear weapons stockpile surveillance; weapons modifications; retrofits; and weapons retirements on early, unsealed weapons systems. For stockpiled weapons, a majority of the workload was related to inspections of systems for corrosion and its removal and replacement of limited life components like batteries, tritium reservoirs, and neutron initiators. Demilitarization involved the dismantling of nuclear weapons with the disposition of radioactive and nonradioactive components and burning of the high-explosives components. High-explosives components were in contact with depleted uranium (DU) and would have dispersed this material in the burning process.

3. The Medina Base contained seven main types of structures: A-structures, C-structures, base spares warehouse, assembly/maintenance buildings, S-structures, storage igloos, and modification/disassembly plants.

a. A-structures. A-structures stored special nuclear material in “birdcages” that protected from accidental criticalities. These structures were built of reinforced concrete, with 1-foot-thick walls and a false single story aboveground facade. The interior space was divided into four single-entry rooms with a narrow bisecting corridor between pairs. Each room contained structural steel racks welded to meet special weapons storage standards. Vault doors controlled access to the interior corridor and each room. Each A-structure could store either 120 or 280 birdcages depending on the spacing of the racks. Birdcages remained sealed while stored in the A-structure; therefore, no waste is believed to have been generated at these locations. The A-structures include buildings 301, 402, 403, 404, 552, 556, 562, 556, 571, and 585. Buildings 402, 403, and 404 were subject to evaluation during this survey effort.

b. C-structures. C-structures were used to maintain the capsules stored in the A-structures. The capsules required periodic disassembly to verify the integrity of the fissile materials. This process generated a small amount of highly enriched and depleted uranium wastes. As of 1966, capsules were phased out and maintenance activities with nuclear materials ceased in C-structures. At these locations, weapons were stored and maintained within the structure. These structures were distinct in their appearance from the C-structures located at AEC locations. These structures were essentially an igloo with a vault inside. No C-structures were subject to evaluation during this survey effort.

c. Three Gravel Gertie cells were built for modifying and disassembling weapons. The buildings possessed heavy blast doors and earth works that would have deflected the effects of an accidental explosion inward. On Medina, buildings 433, 440, and 441 were used for this purpose, although only the latter two were the subject of evaluation during this survey effort. While these facilities were not used for maintenance of nuclear components, weapons containing depleted uranium were handled in the facilities during high-explosives removal operations or modifications. Immediately outside of the Gravel Gertie cells, each facility contained small bays in support of the operations.

d. Building 400 was used for the assembly and maintenance activities on nonnuclear equipment. Limited potential for contamination exists in this facility.

Attachment 2

Contaminants of Concern

1. General. Early nuclear weapons used polonium-beryllium (Po-Be) initiators to generate neutrons during the explosion sequence. Due to the 138-day half-life of ^{210}Po , these devices had to be replaced periodically; however, due to the short half-life, residuals would not be present today. During initiator replacement operations, fissile materials in the capsule were disassembled, inspected, and cleaned prior to reassembly with a new initiator. Plutonium components were encapsulated in a metal skin that limited the potential for loose radioactive material hazards to workers. However, due to the significantly lower radiotoxicity, highly enriched uranium (HEU) and DU parts were not encapsulated in inert metals and were subject to oxidation. While oxidized uranium parts were cleaned on tables prepared with butcher paper to contain oxidized uranium contamination, some potential existed for the spread of contamination to facility. Floors would have had the greatest potential for contamination, if the material was a residual contaminant. Between 1954 and 1957, Po-Be initiators were phased out of the stockpile, effectively limiting maintenance of capsules to an annual activity.

2. Accidents. Accidents involving nuclear weapons or their components were a source of potential contamination at installations outside the scope of routine maintenance and storage activities. On November 1963, an explosion involving 50,500 kg of chemical high explosives and a combination of natural uranium and DU in Igloo 572 occurred. The result of the explosion was the complete destruction of the igloo and dispersal of its contents. The most highly concentrated residuals were located through surveys in a west to southwest direction from the igloo, although due to the amount of high explosives involved in the accident, surface soils in all directions around the detonation site were likely impacted to some degree.

3. Findings from Previous Surveys. The Air Force has conducted numerous surveys of nuclear weapons maintenance and storage facilities, as well as facilities and outdoor areas impacted by accidents. Surveys of building interiors used for nuclear weapons maintenance and storage were conducted on 16 other installations, encompassing 381 separate buildings after 1990. The majority of the surveys were accomplished by the Armstrong Laboratory, Brooks AFB, TX, and follow-on organizations, based on organizational restructuring. Among buildings evaluated at other installations, only three interior structures had evidence of interior radiological contamination: building 723 (Grissom AFB, IN), building 8531 (Carswell AFB, TX), and building 903 (Travis AFB, CA). Buildings 723 and 8531 had small areas of HEU contamination. In both cases, the contamination was apparently a mixture of 90%-plus HEU with DU and was limited to 3 ft³ in building 723 and 98 ft³ in building 8531. The contamination in building 723 was attributed to the handling of weapons that were involved in the 1964 nuclear weapons accident that occurred at Grissom AFB. The contamination at Travis AFB was attributed to a leaking neutron source.

4. Findings from Previous Surveys at Medina Base. Screening surveys of floor surfaces in building 431E were conducted by USAFSAM in 2008 in support of impending self-help facility modifications. While floor scanning activities did not identify any inhomogeneities in detector response, γ -spectroscopy analyses of four floor debris samples were indicative of total uranium

activity concentrations more than 10-fold higher than that typical for soils in the San Antonio area and having an isotopic distribution typical of moderately depleted uranium.

5. Uranium.

a. Physical. Uranium is a naturally occurring radioactive metal that is found in all rocks and soils, with concentrations in common rock ranging from 1 to 4 parts per million (ppm). The isotopes of uranium in the natural environment are ^{234}U , ^{235}U , and ^{238}U . ^{234}U is a daughter in the decay chain of ^{238}U and is normally in equilibrium with its ^{238}U parent in soil matrices. By mass, 99.28% of natural uranium is ^{238}U , with the majority of the balance to ^{235}U . In a pure, metallic state, it is silvery-white in appearance and has a density of 19 grams per cubic centimeter (g/cm^3). In the environment, it occurs in a variety of minerals, but more commonly pitchblende and carnotite, where the uranium is in mostly uranium dioxide (UO_2) or trioxide (UO_3) chemical forms. Although these forms are relatively insoluble, surface and ground water contain low concentrations, making these normally detectable in drinking water sources. As well, ambient concentrations exist in the air from the resuspension of dusts from soil and in foods.

b. Compositions. Figure 2-1 is a histogram of key isotopic mixtures of uranium by mass. The composition for DU is a moderately depleted composition. The exact composition of the DU used for any weapons component can be varied dependent on the depleted process stream. In the earlier days of the weapons program, there was some use of natural uranium metal, historically called Tuballoy. From the Figure 2-1, moderately depleted uranium is similar to natural uranium except it has been stripped of about 70% and 80% of its ^{235}U and ^{234}U content, respectively. An example of HEU is 93.3% enriched uranium, although actual enrichment levels for specific weapons are classified. The remainder of the mass is ^{238}U , 5.6 %, and ^{234}U , 1.1%. Due to significant disparities in the radiological half-lives of the primary isotopes of uranium, there is a significant difference in the isotopic mixes from an activity basis, as illustrated in Figure 2-2. For the 93.3% HEU, 97% of the activity is from ^{234}U , with ^{235}U more than 30-fold lower. For natural uranium, most of the activity is split equally between ^{234}U and ^{238}U . These relationships are important to field sampling methodology selection and risk analyses.

c. Radiological Emissions. Table 2-1 contains a summary of radiation emissions from natural, moderately depleted, and highly enriched uranium. All three are normalized to the emission of a single α -particle, the decay mechanism for all three isotopes, and include the radiological emissions of short-lived radiological daughter products. DU and Tuballoy have a significant frequency of β -particle emissions and of energies for a reasonable fraction that have significant penetrability in materials. The 2.28 mega-electron volt (MeV)_{Max} particle, emitted by $^{234\text{m}}\text{Pa}$, is the highest energy β -particle emitted and provides the largest contribution to shallow dose (external) to tissues from unshielded DU or Tuballoy. None of the isotopic mixes have significant emission frequencies of X- and γ -rays (collectively termed “photons”) in comparison to α -particle emissions. As a contaminant deposited on a surface, screening surveys are often accomplished with portable instruments that are sensitive to α - and/or β -radiation emissions.

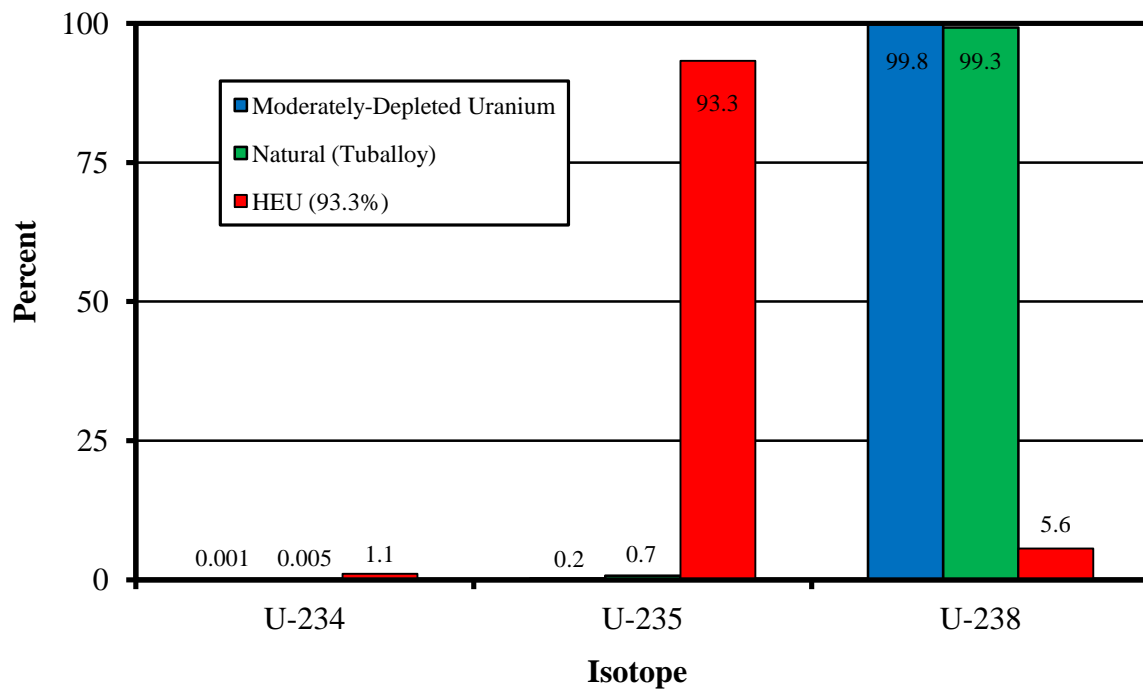


Figure 2-1. Composition of Key Uranium Types (by Mass) [adapted from Rademacher (2008)]

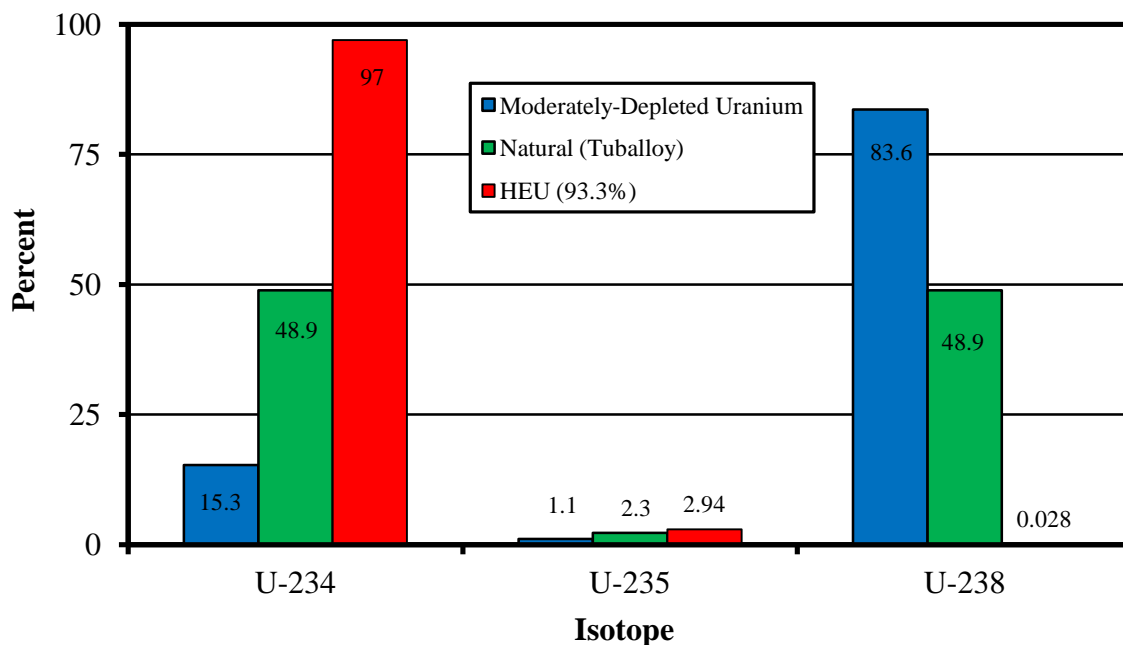


Figure 2-2. Composition of Key Uranium Types (by Activity) [adapted from Rademacher (2008)]

Rademacher SE. Technical guidebook to permitting, investigations, and remedial actions on Air Force section 91b radiological sites (second edition). IOH-SD-BR-SR-2007-0002. Brooks City-Base, TX: Air Force Institute for Operational Health; 2008. Available to those with access.

Table 2-1. Radiation Emissions from Various Isotopic Forms of Uranium

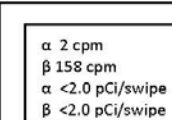
Activity Percents			α -emissions		β -emissions		Photons	
U-234	U-235	U-238	Energy (MeV)	Frequency	Energy (MeV)	Frequency	Energy (MeV)	Frequency
15.3	1.1	83.6	4.20	66%	2.28*	82%	0.0926	4.70%
Specific Activity =	4.0 E-07 Ci/g		4.15	18%	0.189	59%	0.0633	4.1%
			4.78	11%	0.096	22%	0.1857	0.6%
Moderately-Depleted Uranium			4.72	4.4%	0.076	2.4%	1.004	0.5%
			4.40	0.6%	0.287	0.5%	0.1128	0.2%
							Th,U, Pa x-rays	> 10 %
							Brems. x-rays*	variable
U-234	U-235	U-238	Energy (MeV)	Frequency	Energy (MeV)	Frequency	Energy (MeV)	Frequency
97	2.94	0.0275	4.78	69%	0.287	1.4%	0.1857	1.7%
Specific Activity =	6.9 E-05 Ci/g		4.72	28%	0.304	1.0%	0.0256	0.4%
			4.22	2.0%	0.205	0.4%	0.143	0.30%
Highly-Enriched Uranium (93.3 %)			4.40	1.7%			0.0915	0.30%
			Others	0.3%			Th,U, Pa x-rays	> 1%
U-234	U-235	U-238	Energy (MeV)	Frequency	Energy (MeV)	Frequency	Energy (MeV)	Frequency
48.9	2.3	48.9	4.20	39%	2.28*	48%	0.0926	2.7%
Specific Activity =	6.8E-07 Ci/g		4.78	35%	0.189	34%	0.0633	4.20%
			4.72	14%	0.096	13%	0.1857	1.30%
Natural Uranium Metal (Tuballoy)			4.15	10%	0.076	1.4%	0.0256	0.30%
			4.40	1.3%	0.287	1.1%	Th,U, Pa x-rays	> 7 %
			Others	0.7%	0.304	0.8%	Brems. x-rays*	variable
	β -Particles with energy too low for typical portable instrument detection							

Attachment 3

Regulatory Issues

1. The radioactive materials associated with residual from nuclear weapons systems while in the custody of the Department of Defense are covered under Chapter 9, Section 91(b), of the Atomic Energy Act of 1954 (42 U.S.C. § 2011 *et seq.*), which exempted these materials from regulation by the AEC. The part of the AEC that regulated most radioactive commercial and some Department of Defense use of radioactive material was re-established as the Nuclear Regulatory Commission (NRC). Within the Department of the Air Force, oversight on the use of Section 91b materials is provided by the Weapons Safety Division of AFSEC (AFSEC/SEW), as provided for in AF Instruction 91-108, *Air Force Nuclear Weapons Intrinsic Radiation and 91(b) Radioactive Material Safety Program*, 21 Sep 10. The buildings that were covered by the survey effort described in this letter are under Permit #2005-91B-014, Amendment (1), 23 Oct 06.
2. Most previous AF nuclear munitions storage and maintenance structures were evaluated under the criteria in Regulatory Guide 1.86 (Attachment 4). Values from the guide are currently referenced by AF Instruction 48-148, *Ionizing Radiation Protection*, 21 Sep 11, with the addition of a criterion for tritium and tritiated compounds from 10 CFR 835, Appendix D. The NRC allows its licensees to use site-specific criteria that meet license termination criteria established in 10 CFR 20, Subpart E. The criteria in Regulatory Guide 1.86, generally, are more restrictive than site-specific criteria developed by computer-based, dose-modeling software for transuranic isotopes. For fixed contamination from uranium, the criterion specified in Regulatory Guide 1.86 is 5,000 dpm/100 cm². For removable uranium contamination, the criterion from Regulatory Guide 1.86 is 1,000 dpm/100 cm². While Section 91(b) materials are not subject to NRC rules, AFSEC/SEW commonly applies NRC established standards to projects.

Swipe Sample Diagrams, Logs, and Results



α 7 cpm
β 147 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 1 cpm
β 143 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 2 cpm
β 123 cpm
α <2.0 pCi/swipe
β 1.3+/-1.0 pCi/swipe

α 3 cpm
β 136 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 0 cpm
β 152 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 2 cpm
β 130 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 1 cpm
β 140 cpm
α <2.0 pCi/swipe
β 1.10+/-1.0 pCi/swipe

α 1 cpm
β 140 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

α 4 cpm
β 141 cpm
α <2.0 pCi/swipe
β <2.0 pCi/swipe

Office Area

BKG Counts

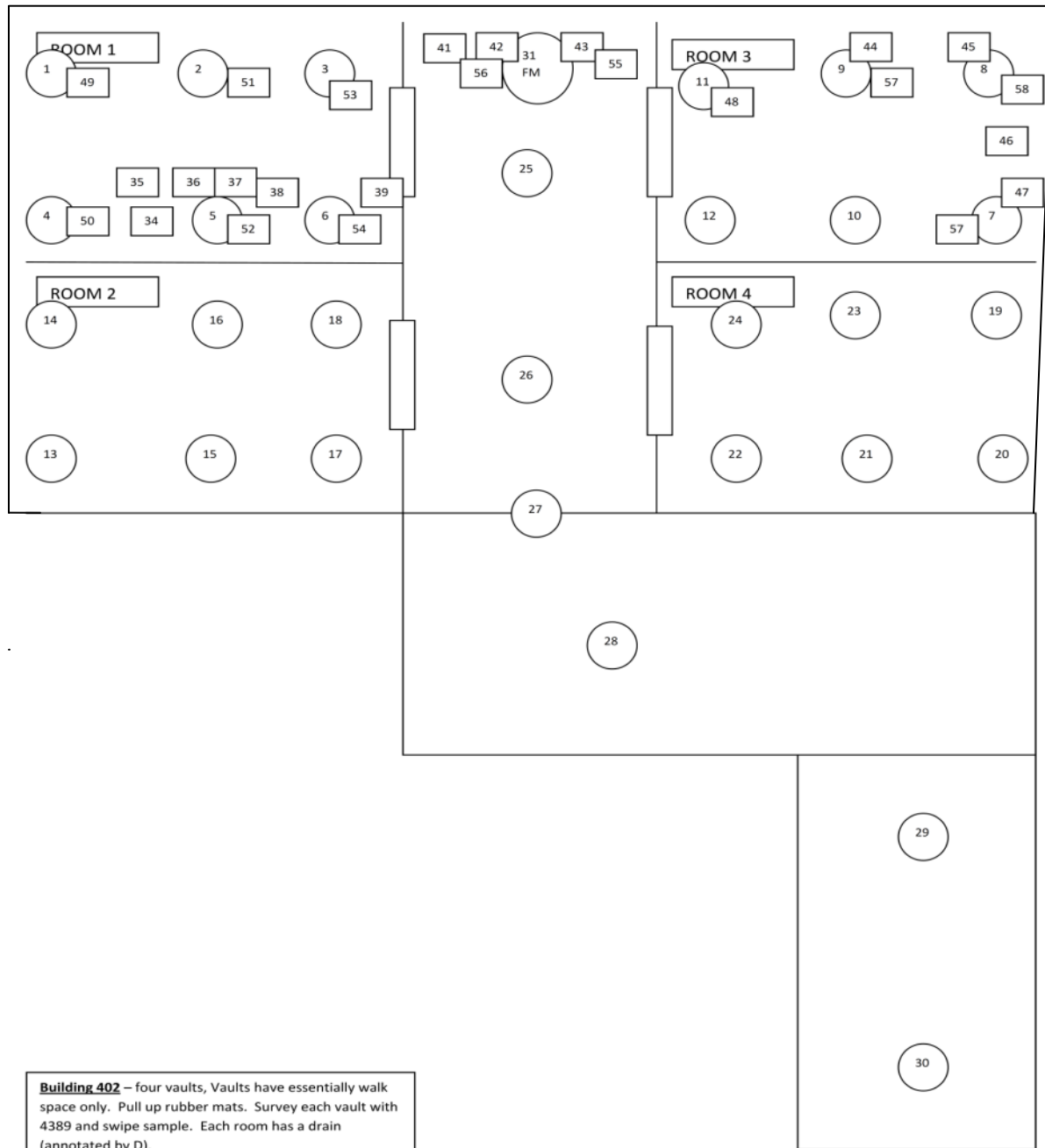
4389 α 0 cpm	Lab swipes - α <2.0 pCi/swipe	FIDLER - (1 min window in) -
β 147 cpm	β <2.0 pCi/swipe	815 cpm

4389 S/N- 12868

Bldg 400 Medina Annex (70% scannable)

FIDLER (INDEX 05683) readings vary from 800-900 cpm

Slight variances were noted between concrete areas



Building 402 Swipe Sample Log

Date: 4-May-09

9-Jun Technician: Fyffe

Instrument 1 4389 05022 5991 Background: 21 cpm alpha (concrete pad outside)

Instrument 2 FIDLER 05683 Background: 4863 cpm (concrete pad outside)

Instrument 3 Floor monito 05555 Background: 17 cpm alpha (concrete pad outside)

NOTE: High alpha readings are due to build up of radon daughters

Map Area	Room #		Location	Initial Instrument Reading			Field Sample Number	Lab Sample Number	Results		
				Inst. 1 (α -response)	Inst. 2	Inst. 3			Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
1	1		see map	93			402 F1	90501	3.2 +/- 1.3	3.5 +/- 1.4	<50
2	1		see map	93			402 F2	90502	7 +/- 1.9	1.99 +/- 3	<50
3	1		see map	99			402 F3	90503	5.6 +/- 1.7	1.42 +/- 2.6	<50
4	1		see map	94			402 F4	90504	10.2 +/- 2.3	27.9 +/- 3.5	<50
5	1		see map	124			402 F5	90505	5.9 +/- 1.8	20.7 +/- 3.1	<50
6	1		see map	111			402 F6	90506	8.0 +/- 2.0	20.6 +/- 3.1	<50
7	2		see map	108			402 F7	90507	5.9 +/- 1.8	11.4 +/- 2.3	<50
8	2		see map	104			402 F8	90508	4.5 +/- 1.5	15.1 +/- 2.6	<50
9	2		see map	98			402 F9	90509	4.8 +/- 1.6	17.8 +/- 2.8	<50
10	2		see map	101			402 F10	90510	3.8 +/- 1.4	8.4 +/- 2.0	<50
11	2		see map	120			402 F11	90511	3.4 +/- 1.4	10.6 +/- 2.3	<50
12	2		see map	107			402 F12	90512	4.7 +/- 1.6	7.6 +/- 2.0	<50
13	3		see map	91			402 F13	90513	2.4 +/- 1.1	8.1 +/- 2.0	<50
14	3		see map	96			402 F14	90514	3.3 +/- 1.3	10.6 +/- 2.3	<50

				Initial Instrument Reading					Results		
Map Area	Room #		Location	Inst. 1 (α -response)	Inst. 2	Inst. 3	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
15	3		see map	94			402 F15	90515	3.8 +/- 1.4	11.9 +/- 2.4	<50
16	3		see map	123			402 F16	90516	2.9 +/- 1.2	7.6 +/- 2.0	<50
17	3		see map	115			402 F17	90517	6.1 +/- 1.8	10.8 +/- 2.3	<50
18	3		see map	78			402 F18	90518	3.8 +/- 1.4	9.4 +/- 2.1	<50
19	4		see map	100			402 F19	90519	2.1 +/- 1.1	4.4 +/- 1.6	<50
20	4		see map	110			402 F20	90520	2.9 +/- 1.2	6.4 +/- 1.8	<50
21	4		see map	78			402 F21	90521	4.5 +/- 1.5	12.1 +/- 2.4	<50
22	4		see map	98			402 F22	90522	5.2 +/- 1.7	11.8 +/- 2.4	<50
23	4		see map	96			402 F23	90523	3.7 +/- 1.4	11.2 +/- 2.3	<50
24	4		see map	95			402 F24	90524	4.7 +/- 1.6	6.2 +/- 1.8	<50
25	hall		see map	105			402 F25	90525	2.5 +/- 1.2	2.8 +/- 1.3	<50
26	hall		see map	73			402 F26	90526	1.6 +/- 0.9	3.8 +/- 1.5	<50
27	hall		see map	74			402 F27	90527	1.3 +/- 0.8	2.9 +/- 1.4	<50
28	hall		see map	101			402 F28	90528	<2.0	3.5 +/- 1.4	<50
29	hall		see map	126			402 F29	90529	2.0 +/- 1.0	2.5 +/- 1.3	<50
30	hall		see map	66			402 F30	90530	1.4 +/- 0.9	2.6 +/- 1.3	<50
31	monitor "hot spot"		see map	212			402 F31	90531	9.2 +/- 2.2	16.4 +/- 2.7	<50
32	Drain		see map	119			402 F32	90532	<2.0	<2.0	<50
33	Drain		see map	108			402 F33	90533	<2.0	<2.0	<50

Swipes collected over 100 cm² area. Multiply by 2.2 for dpm/100 cm² concentration.

Building 402 Swipe Sample Log

Date: 27-May-09

Technician: Fyffe

Instrument 4389 05591

Background: 17 cpm α outside 194 α inside door

Instrument 2: _____

Background: _____

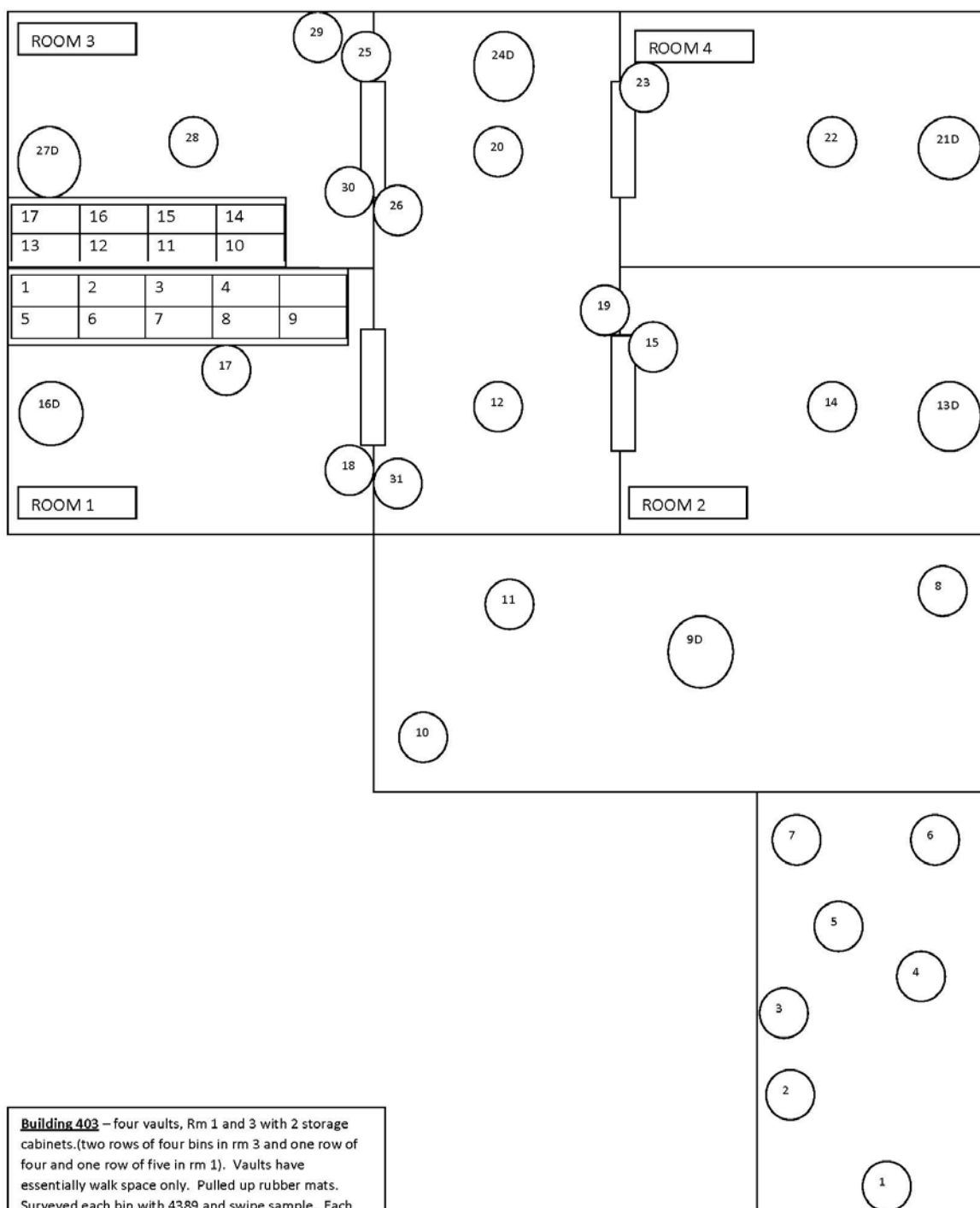
Instrument 3: _____

Background: _____

Map Area	Room #	Location		Inst. 1 (α -response)	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
34	Resampling	see map II		155	90733	10900236	2.30+/-1.10	4.80+/-1.60	<50
35	Resampling	see map II		150	90734	10900237	3.70+/-1.40	5.30+/-1.60	<50
36	Resampling	see map II		154	90735	10900238	4.70+/-1.50	7.70+/-1.90	<50
37	Resampling	see map II		117	90736	10900239	2.60+/-1.10	3.70+/-1.40	<50
38	Resampling	see map II		118	90737	10900240	1.60+/-0.90	4.00+/-1.40	<50
39	Resampling	see map II		136	90738	10900241	3.30+/-1.30	2.90+/-1.30	<50
40	Resampling	see map II		122	90739	10900242	4.30+/-1.50	6.00+/-1.70	<50
41	Resampling	see map II		120	90740	10900243	3.00+/-1.20	6.10+/-1.70	<50
42	Resampling	see map II		118	90741	10900244	2.10+/-1.10	4.20+/-1.50	<50
43	Resampling	see map II		201	90742	10900245	6.80+/-1.90	10.3+/-2.20	<50
44	Resampling	see map II		99	90743	10900246	2.00+/-1.00	4.10+/-1.60	<50
45	Resampling	see map II		115	90744	10900247	2.60+/-1.20	5.50+/-1.70	<50
46	Resampling	see map II		136	90745	10900248	2.50+/-1.20	5.80+/-1.70	<50
47	Resampling	see map II		167	90746	10900249	4.00+/-1.50	5.20+/-1.70	<50
48	Resampling	see map II		130	90747	10900250	2.50+/-1.20	5.20+/-1.70	<50
Swipes collected over 100 cm ² area. Multiply by 2.2 for dpm/100 cm ² concentration.									

Building 402 Swipe Sample LogDate: 24-Aug-10Technician: YlieminiInstrument 1 4389 129868 5991 Background: 46 cpm alpha(α) 212 Beta(β) (concrete pad outside)**NOTE:** High alpha readings on the initial instrument readings are due to build up of radon daughters

				Reading					Results		
Map Area	Room #		Location	Inst. 1	Inst. 2	Inst. 3	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
49	1		see map				402 F49	109027	<2	3.80+/-1.50	<50
50	1		see map				402 F50	109028	2.20+/-1.10	2.60+/-1.30	<50
51	1		see map				402 F51	109029	5.70+/-1.70	10.7+/-2.30	<50
52	1		see map				402 F52	109030	1.50+/-0.90	<2	<50
53	1		see map	74 α /244 β			402 F53	109031	5.10+/-1.60	5.70+/-1.70	<50
54	1		see map	72 α /200 β			402 F54	109032	<2	<2	<50
55	Hallway		see map	115 α /283 β			402 F55	109033	5.30+/-1.70	6.60+/-1.90	<50
56	Hallway		see map	74 α /261 β			402 F56	109034	<2	<2	<50
BKG	Front concrete	outside						109026	<2	<2	<50
Swipes collected over 100 cm ² area. Multiply by 2.2 for dpm/100 cm ² concentration.											



Building 403 Swipe Sample Log

Date: 4-May-09

Technician: Verrett

Instrument 1 FIDLER S/N 5681 Background: 37,291 cpm (concrete pad outside)

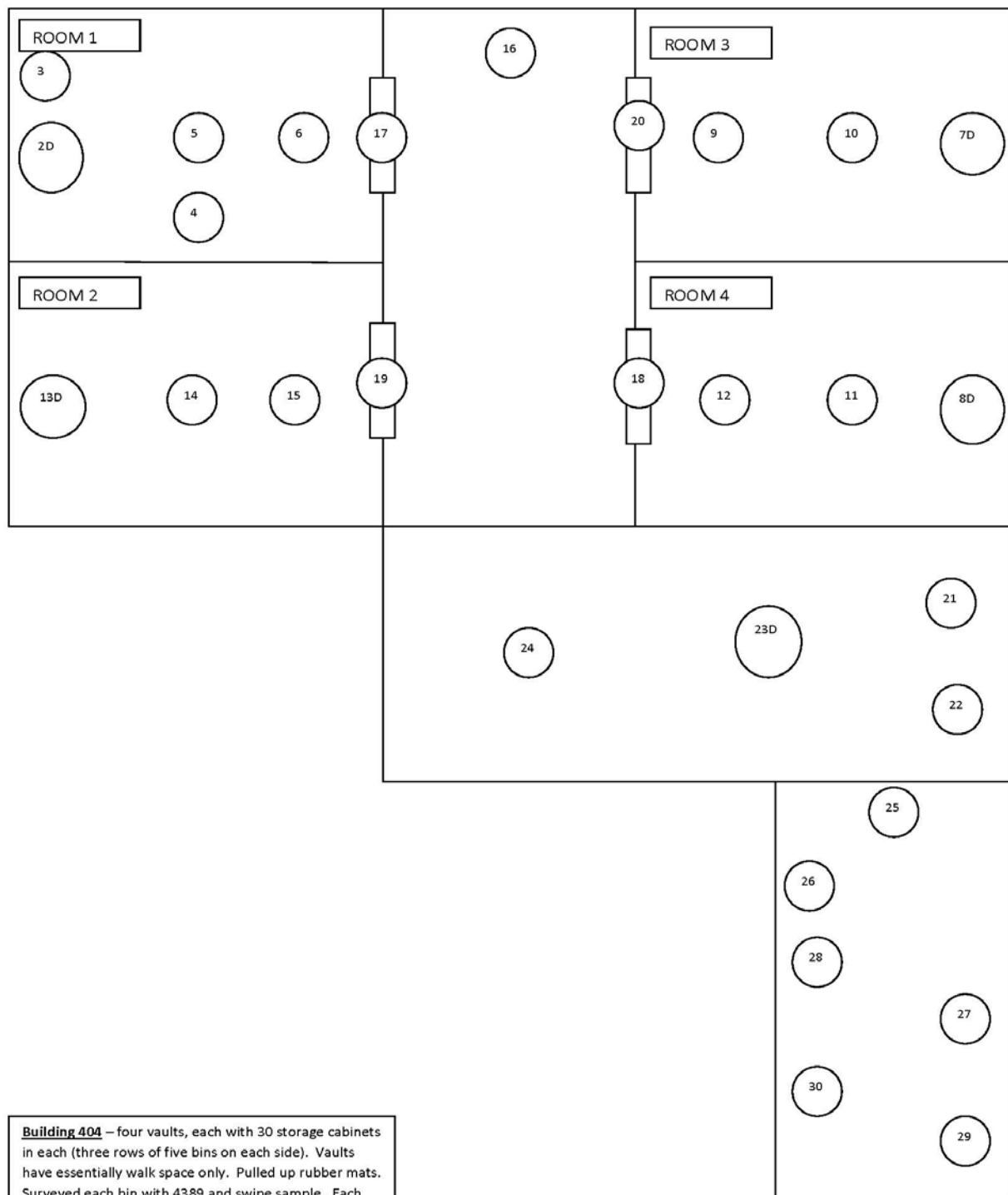
Instrument 2 4389 S/N 5591 Background: 11 cpm alpha (concrete pad outside)

Instrument 3 floor monitor S/N 5714 Background: 30 cpm alpha (α) 947 cpm beta(β) (concrete pad outside)

NOTE: High alph readings are due to build up of radon daughters

			Initial Instrument Reading				Results		
Area on map	Room #		Inst. 1	Inst. 2	Field Sample	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
1	Hallway	see map		31 α 175 β	403-F-001	90534	2.2 +/- 1.1	2.6 +/- 1.3	<50
2	Hallway	see map		28 α 175 β	403-F-002	90535	3.8 +/- 1.4	5.0 +/- 1.7	<50
3	Hallway	see map		40 α 175 β	403-F-003	90536	2.0 +/- 1.0	2.7 +/- 1.3	<50
4	Hallway	see map		38 α 185 β	403-F-004	90537	3.6 +/- 1.4	4.2 +/- 1.6	<50
5	Hallway	see map		25 α 155 β	403-F-005	90538	3.0 +/- 1.3	2.9 +/- 1.4	<50
6	Hallway	see map		54 α 162 β	403-F-006	90539	6.5 +/- 1.9	5.9 +/- 1.8	<50
7	Hallway	see map		45 α 174 β	403-F-007	90540	4.3 +/- 1.5	7.8 +/- 2.0	<50
8	Hallway	see map		36 α 164 β	403-F-008	90541	3.7 +/- 1.4	2.8 +/- 1.3	<50
9	Hallway	see map		62 α 190 β	403-F-009	90542	5.6 +/- 1.7	8.4 +/- 2.0	<50
10	Hallway	see map		47 α 195 β	403-F-010	90543	4.1 +/- 1.5	3.0 +/- 1.4	<50
11	Hallway	see map		24 α 217 β	403-F-011	90544	4.0 +/- 1.5	10.8 +/- 2.3	<50
12	Hallway	see map		30 α 201 β	403-F-012	90545	1.4 +/- 0.9	1.8 +/- 1.2	<50
D13	Room 2	see map		57 α 229 β	403-F-013	90546	<2	<2	<50
14	Room 2	see map		49 α 202 β	403-F-014	90547	3.3 +/- 1.3	3.8 +/- 1.5	<50
15	Room 2	see map		34 α 227 β	403-F-015	90548	3.0 +/- 1.3	8.8 +/- 2.0	<50

Area on map	Room #		Initial Instrument Reading		Field Sample Number	Lab Sample Number	Results		
			Inst. 1	Inst. 2			Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
D16	Room 1	see map	1915	43 α 211 β	403-F-016	90549	<2	1.5 +/- 1.0	<50
17	Room 1	see map		33 α 199 β	403-F-017	90550	<2	2.5 +/- 1.2	<50
18	Room 1	see map		34 α 220 β	403-F-018	90551	<2	2.5 +/- 1.2	<50
19	Hallway	see map		36 α 236 β	403-F-019	90552	<2	1.9 +/- 1.1	<50
20	Hallway	see map		38 α 177 β	403-F-020	90553	1.6 +/- 0.9	3.8 +/- 1.4	<50
D21	Room 4	see map	1959	45 α 147 β	403-F-021	90554	<2	<2	<50
22	Room 4	see map		38 α 166 β	403-F-022	90555	1.3 +/- 0.8	1.2 +/- 1.0	<50
23	Room 4	see map		30 α 260 β	403-F-023	90556	3.8 +/- 1.4	9.1 +/- 2.1	<50
D24	Hallway	see map		81 α 246 β	403-F-024	90557	1.8 +/- 1.0	2.5 +/- 1.2	<50
25	Hallway	see map		34 α 272 β	403-F-025	90558	1.6 +/- 0.9	4.0 +/- 1.5	<50
26	Hallway	see map		25 α 217 β	403-F-026	90559	2.2 +/- 1.1	2.2 +/- 1.2	<50
D27	Room 3	see map	1766	47 α 160 β	403-F-027	90560	<2	<2	<50
28	Room 3	see map		30 α 217 β	403-F-028	90561	<2	1.1 +/- 1.0	<50
29	Room 3	see map	3409	24 α 197 β	403-F-029	90562	<2	1.2 +/- 1.0	<50
30	Room 3	see map		19 α 208 β	403-F-030	90563	<2	4.3 +/- 1.5	<50
31	Hallway	see map		27 α 196 β	403-F-031	90564	2.0 +/- 1.0	3.1 +/- 1.3	<50
C1	1	see map		See attached	403-C-001	90565	<2	<2	<50
C2	1	see map		See attached	403-C-002	90566	<2	<2	<50
C3	1	see map		See attached	403-C-003	90567	<2	1.4 +/- 1.0	<50
C4	1	see map		See attached	403-C-004	90568	2.5 +/- 1.2	2.8 +/- 1.3	<50



Building 404 Swipe Sample Log

Date: 4-May-09

Technician: Fyffe

Instrument 1 4389 05022/05591

Background: 21 cpm alpha (concrete pad outside)

Instrument 2 FIDLER 05681/05683

Background: 3750 cpm (concrete pad outside)

Instrument 3 Floor monit05714/05555

Background: 19 cpm alpha (concrete pad outside)

NOTE: High alpha readings are due to build up of radon daughters

				Readings		Results			
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
1	1		see map		404-F-1	90582	<2	2.1 +/- 1.2	<50
2	1	drain	see map		404-F-2	90583	<2	1.3 +/- 1.0	<50
3	1		see map		404-F-3	90584	<2	2.0 +/- 1.1	<50
4	1		see map		404-F-4	90585	<2	1.5 +/- 1.0	<50
5	1		see map		404-F-5	90586	<2	1.9 +/- 1.1	<50
6	1		see map		404-F-6	90587	<2	3.5 +/- 1.4	<50
7	3	drain	see map		404-F-7	90588	<2	1.8 +/- 1.1	<50
8	4	drain	see map		404-F-8	90589	<2	<2	<50
9	3		see map		404-F-9	90590	<2	1.3 +/- 1.0	<50
10	3		see map		404-F-10	90591	<2	1.9 +/- 1.1	<50
11	4		see map		404-F-11	90592	<2	2.4 +/- 1.2	<50
12	4		see map		404-F-12	90593	<2	1.4 +/- 1.0	<50
13	2		see map		404-F-13	90594	<2	2.0 +/- 1.1	<50
14	2		see map		404-F-14	90595	<2	1.3 +/- 1.0	<50
15	2		see map		404-F-15	90596	<2	<2	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
16	hall		see map		404-F-16	90597	<2	<2	<50
17	hall		see map		404-F-17	90598	<2	<2	<50
18	hall		see map		404-F-18	90599	<2	<2	<50
19	hall		see map		404-F-19	90600	<2	<2	<50
20	hall		see map		404-F-20	90601	<2	<2	<50
21	hall		see map		404-F-21	90602	<2	<2	<50
22	hall		see map		404-F-22	90603	<2	1.1 +/- 1.0	<50
23	hall		see map		404-F-23	90604	<2	3.4 +/- 1.4	<50
24	hall		see map		404-F-24	90605	<2	2.7 +/- 1.3	<50
25	hall		see map		404-F-25	90606	<2	2.0 +/- 1.1	<50
26	hall		see map		404-F-26	90607	<2	<2	<50
27	hall		see map		404-F-27	90608	<2	2.8 +/- 1.3	<50
28	hall		see map		404-F-28	90609	<2	1.2 +/- 1.0	<50
29	hall		see map		404-F-29	90610	<2	<2	<50
30	hall		see map		404-F-30	90611	<2	<2	<50
31	1	cabinet	see map	17	404-C-1	90612	<2	<2	<50
32	1	cabinet	see map	20	404-C-2	90613	<2	<2	<50
33	1	cabinet	see map	12	404-C-3	90614	<2	1.2 +/- 1.0	<50
34	1	cabinet	see map	15	404-C-4	90615	<2	1.5 +/- 1.0	<50
35	1	cabinet	see map	12	404-C-5	90616	<2	1.6 +/- 1.1	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
36	1	cabinet	see map	9	404-C-6	90617	<2	<2	<50
37	1	cabinet	see map	7	404-C-7	90618	<2	<2	<50
38	1	cabinet	see map	12	404-C-8	90619	<2	<2	<50
39	1	cabinet	see map	9	404-C-9	90620	<2	<2	<50
40	1	cabinet	see map	13	404-C-10	90621	<2	<2	<50
41	1	cabinet	see map	14	404-C-11	90622	<2	<2	<50
42	1	cabinet	see map	20	404-C-12	90623	<2	<2	<50
43	1	cabinet	see map	18	404-C-13	90624	<2	2.8 +/- 1.3	<50
44	1	cabinet	see map	20	404-C-14	90625	<2	1.2 +/- 1.0	<50
45	1	cabinet	see map	10	404-C-15	90626	<2	1.6 +/- 1.1	<50
46	1	cabinet	see map	14	404-C-16	90627	<2	1.5 +/- 1.0	<50
47	1	cabinet	see map	15	404-C-17	90628	<2	2.0 +/- 1.1	<50
48	1	cabinet	see map	12	404-C-18	90629	<2	1.3 +/- 1.0	<50
49	1	cabinet	see map	18	404-C-19	90630	<2	<2	<50
50	1	cabinet	see map	13	404-C-20	90631	<2	1.2 +/- 1.0	<50
51	1	cabinet	see map	14	404-C-21	90632	<2	<2	<50
52	1	cabinet	see map	21	404-C-22	90633	<2	<2	<50
53	1	cabinet	see map	10	404-C-23	90634	<2	1.4 +/- 1.0	<50
54	1	cabinet	see map	18	404-C-24	90635	<2	<2	<50
55	1	cabinet	see map	11	404-C-25	90636	<2	1.1 +/- 1.0	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
56	1	cabinet	see map	17	404-C-26	90637	<2	<2	<50
57	1	cabinet	see map	8	404-C-27	90638	<2	<2	<50
58	1	cabinet	see map	5	404-C-28	90639	1.4 +/- 0.9	1.5 +/- 1.0	<50
59	1	cabinet	see map	14	404-C-29	90640	1.4 +/- 0.9	2.2 +/- 1.2	<50
60	1	cabinet	see map	12	404-C-30	90641	1.6 +/- 0.9	1.8 +/- 1.1	<50
61	2	cabinet	see map	10	404-C-31	90642	<2	1.6 +/- 1.1	<50
62	2	cabinet	see map	4	404-C-32	90643	<2	1.1 +/- 1.0	<50
63	2	cabinet	see map	6	404-C-33	90644	<2	1.4 +/- 1.1	<50
64	2	cabinet	see map	16	404-C-34	90645	<2	2.8 +/- 1.3	<50
65	2	cabinet	see map	22	404-C-35	90646	<2	1.7 +/- 1.1	<50
66	2	cabinet	see map	6	404-C-36	90647	<2	2.1 +/- 1.2	<50
67	2	cabinet	see map	8	404-C-37	90648	<2	1.2 +/- 1.0	<50
68	2	cabinet	see map	8	404-C-38	90649	<2	1.4 +/- 1.1	<50
69	2	cabinet	see map	8	404-C-39	90650	<2	<2	<50
70	2	cabinet	see map	8	404-C-40	90651	<2	<2	<50
71	2	cabinet	see map	8	404-C-41	90652	<2	1.1 +/- 1.0	<50
72	2	cabinet	see map	2	404-C-42	90653	<2	1.7 +/- 1.1	<50
73	2	cabinet	see map	4	404-C-43	90654	<2	<2	<50
74	2	cabinet	see map	12	404-C-44	90655	<2	1.9 +/- 1.2	<50
75	2	cabinet	see map	6	404-C-45	90656	<2	3.5 +/- 1.4	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
76	2	cabinet	see map	19	404-C-46	90657	<2	2.2 +/- 1.2	<50
77	2	cabinet	see map	12	404-C-47	90658	2.4 +/- 1.2	3.7 +/- 1.4	<50
78	2	cabinet	see map	18	404-C-48	90659	<2	1.9 +/- 1.2	<50
79	2	cabinet	see map	20	404-C-49	90660	1.5 +/- 0.9	2.4 +/- 1.2	<50
80	2	cabinet	see map	12	404-C-50	90661	<2	1.1 +/- 1.0	<50
81	2	cabinet	see map	12	404-C-51	90662	<2	<2	<50
82	2	cabinet	see map	4	404-C-52	90663	<2	<2	<50
83	2	cabinet	see map	12	404-C-53	90664	<2	1.3 +/- 1.0	<50
84	2	cabinet	see map	6	404-C-54	90665	<2	<2	<50
85	2	cabinet	see map	7	404-C-55	90666	<2	<2	<50
86	2	cabinet	see map	8	404-C-56	90667	<2	1.1 +/- 1.0	<50
87	2	cabinet	see map	4	404-C-57	90668	<2	<2	<50
88	2	cabinet	see map	8	404-C-58	90669	<2	<2	<50
89	2	cabinet	see map	8	404-C-59	90670	<2	<2	<50
90	2	cabinet	see map	8	404-C-60	90671	<2	1.1 +/- 1.0	<50
91	3	cabinet	see map	17	404-C-61	90672	<2	1.1 +/- 1.0	<50
92	3	cabinet	see map	17	404-C-62	90673	<2	3.6 +/- 1.4	<50
93	3	cabinet	see map	16	404-C-63	90674	<2	2.8 +/- 1.3	<50
94	3	cabinet	see map	18	404-C-64	90675	1.8 +/- 1.0	3.8 +/- 1.5	<50
95	3	cabinet	see map	11	404-C-65	90676	<2	<2	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
96	3	cabinet	see map	16	404-C-66	90677	<2	1.8 +/- 1.1	<50
97	3	cabinet	see map	17	404-C-67	90678	<2	1.9 +/- 1.2	<50
98	3	cabinet	see map	13	404-C-68	90679	<2	2.8 +/- 1.3	<50
99	3	cabinet	see map	9	404-C-69	90680	1.9 +/- 1.0	1.9 +/- 1.2	<50
100	3	cabinet	see map	24	404-C-70	90681	<2	2.6 +/- 1.2	<50
101	3	cabinet	see map	16	404-C-71	90682	1.8 +/- 1.0	2.1 +/- 1.2	<50
102	3	cabinet	see map	21	404-C-72	90683	1.8 +/- 1.0	3.2 +/- 1.4	<50
103	3	cabinet	see map	13	404-C-73	90684	<2	3.4 +/- 1.4	<50
104	3	cabinet	see map	11	404-C-74	90685	<2	1.5 +/- 1.1	<50
105	3	cabinet	see map	5	404-C-75	90686	1.5 +/- 0.9	3.0 +/- 1.3	<50
106	3	cabinet	see map	18	404-C-76	90687	<2	1.5 +/- 1.1	<50
107	3	cabinet	see map	9	404-C-77	90688	<2	1.7 +/- 1.1	<50
108	3	cabinet	see map	13	404-C-78	90689	<2	2.5 +/- 1.3	<50
109	3	cabinet	see map	7	404-C-79	90690	<2	1.3 +/- 1.0	<50
110	3	cabinet	see map	11	404-C-80	90691	<2	2.1 +/- 1.2	<50
111	3	cabinet	see map	7	404-C-81	90692	<2	1.7 +/- 1.1	<50
112	3	cabinet	see map	4	404-C-82	90693	<2	1.2 +/- 1.0	<50
113	3	cabinet	see map	11	404-C-83	90694	<2	<2	<50
114	3	cabinet	see map	19	404-C-84	90695	<2	<2	<50
115	3	cabinet	see map	9	404-C-85	90696	<2	<2	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
116	3	cabinet	see map	3	404-C-86	90697	<2	2.5 +/- 1.3	<50
117	3	cabinet	see map	10	404-C-87	90698	1.4 +/- 0.9	2.1 +/- 1.2	<50
118	3	cabinet	see map	17	404-C-88	90699	<2	1.2 +/- 1.0	<50
119	3	cabinet	see map	16	404-C-89	90700	<2	1.4 +/- 1.1	<50
120	3	cabinet	see map	17	404-C-90	90701	<2	4.6 +/- 1.6	<50
121	4	cabinet	see map	9	404-C-91	90702	<2	1.3 +/- 1.0	<50
122	4	cabinet	see map	8	404-C-92	90703	<2	<2	<50
123	4	cabinet	see map	12	404-C-93	90704	<2	1.3 +/- 1.0	<50
124	4	cabinet	see map	12	404-C-94	90705	<2	<2	<50
125	4	cabinet	see map	20	404-C-95	90706	<2	1.1 +/- 1.0	<50
126	4	cabinet	see map	16	404-C-96	90707	<2	1.3 +/- 1.0	<50
127	4	cabinet	see map	14	404-C-97	90708	<2	<2	<50
128	4	cabinet	see map	18	404-C-98	90709	<2	<2	<50
129	4	cabinet	see map	6	404-C-99	90710	<2	<2	<50
130	4	cabinet	see map	13	404-C-100	90711	<2	<2	<50
131	4	cabinet	see map	16	404-C-101	90712	<2	<2	<50
132	4	cabinet	see map	10	404-C-102	90713	<2	<2	<50
133	4	cabinet	see map	8	404-C-103	90714	<2	<2	<50
134	4	cabinet	see map	14	404-C-104	90715	<2	1.4 +/- 1.1	<50
135	4	cabinet	see map	8	404-C-105	90716	<2	<2	<50

				Readings			Results		
Area on Map	Room #	Location		Inst. 1	Field Sample Number	Lab Sample Number	Gross alpha (pCi/swipe)	Gross beta (pCi/swipe)	Gross gamma (pCi/swipe)
136	4	cabinet	see map	13	404-C-106	90717	<2	<2	<50
137	4	cabinet	see map	14	404-C-107	90718	<2	1.3 +/- 1.0	<50
138	4	cabinet	see map	7	404-C-108	90719	<2	<2	<50
139	4	cabinet	see map	8	404-C-109	90720	<2	1.4 +/- 1.1	<50
140	4	cabinet	see map	19	404-C-110	90721	<2	<2	<50
141	4	cabinet	see map	5	404-C-111	90722	<2	<2	<50
142	4	cabinet	see map	14	404-C-112	90723	<2	<2	<50
143	4	cabinet	see map	10	404-C-113	90724	<2	<2	<50
144	4	cabinet	see map	5	404-C-114	90725	<2	<2	<50
145	4	cabinet	see map	16	404-C-115	90726	<2	<2	<50
146	4	cabinet	see map	16	404-C-116	90727	<2	<2	<50
147	4	cabinet	see map	12	404-C-117	90728	<2	<2	<50
148	4	cabinet	see map	9	404-C-118	90729	<2	<2	<50
149	4	cabinet	see map	20	404-C-119	90730	<2	<2	<50
150	4	cabinet	see map	10	404-C-120	90731	1.5 +/- 0.9	1.7 +/- 1.1	<50
Swipes collected over 100 cm ² area. Multiply by 2.2 for dpm/100 cm ² concentration.									

Building 404 Swipe Sample Log

Date: 4-May-09

Technician: Fyffe

Instrument: 4389-SN05591

Background: 21 cpm α

Room Number: 1

Top	<div>Inst reading: 17 cpm α</div> <div>Sample # C1</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 20 cpm α</div> <div>Sample # C2</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C3</div> <div>< 2 cpm α</div> <div>1.2+/-1.0 cpm β</div> <div>< 50 cpm λ</div>	<div>Inst reading: 15 cpm α</div> <div>Sample # C4</div> <div>< 2 pCi/sw α</div> <div>1.5+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C5</div> <div>< 2 pCi/sw α</div> <div>1.6+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	
Middle	<div>Inst reading: 9 cpm α</div> <div>Sample # C6</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 7 cpm α</div> <div>Sample # C7</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C8</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 9 cpm α</div> <div>Sample # C9</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 13 cpm α</div> <div>Sample # C10</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Right side
Bottom	<div>Inst reading: 14 cpm α</div> <div>Sample # C11</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 20 cpm α</div> <div>Sample # C12</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 18 cpm α</div> <div>Sample # C13</div> <div>< 2 pCi/sw α</div> <div>2.8+/-1.3 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 20 cpm α</div> <div>Sample # C14</div> <div>< 2 pCi/sw α</div> <div>1.2+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 10 cpm α</div> <div>Sample # C15</div> <div>< 2 pCi/sw α</div> <div>1.6+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	
Bottom	<div>Inst reading: 12 cpm α</div> <div>Sample # C30</div> <div>1.6+/-0.9 pCi/sw α</div> <div>1.8+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C29</div> <div>1.4+/-0.9 pCi/sw α</div> <div>2.2+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 5 cpm α</div> <div>Sample # C28</div> <div>1.4+/-0.9 pCi/sw α</div> <div>1.5+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C27</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 17 cpm α</div> <div>Sample # C26</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Door
Middle	<div>Inst reading: 11 cpm α</div> <div>Sample # C25</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 18 cpm α</div> <div>Sample # C24</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 10 cpm α</div> <div>Sample # C23</div> <div>< 2 pCi/sw α</div> <div>1.4+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 21 cpm α</div> <div>Sample # C22</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C21</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Left side
Top	<div>Inst reading: 13 cpm α</div> <div>Sample # C20</div> <div>< 2 pCi/sw α</div> <div>1.2+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 18 cpm α</div> <div>Sample # C19</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C18</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 15 cpm α</div> <div>Sample # C17</div> <div>< 2 pCi/sw α</div> <div>2.0+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C16</div> <div>< 2 pCi/sw α</div> <div>1.5+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	

Building 404 Swipe Sample Log

Date: 4-May-09

Technician: Fyffe

Instrument: 4389-SN05591

Background: 21 cpm α

Room Number: 2

Top	<div>Inst reading: 22 cpm α</div> <div>Sample # C35</div> <div>< 2 pCi/sw α</div> <div>1.7+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 16 cpm α</div> <div>Sample # C34</div> <div>< 2 pCi/sw α</div> <div>2.8+/-1.3 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 6 cpm α</div> <div>Sample # C33</div> <div>< 2 cpm α</div> <div>1.4+/-1.1 cpm β</div> <div>< 50 cpm λ</div>	<div>Inst reading: 4 cpm α</div> <div>Sample # C32</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 10 cpm α</div> <div>Sample # C31</div> <div>< 2 pCi/sw α</div> <div>1.6+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	
Middle	<div>Inst reading: 6 cpm α</div> <div>Sample # C36</div> <div>< 2 pCi/sw α</div> <div>2.1+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C37</div> <div>< 2 pCi/sw α</div> <div>1.2+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C38</div> <div>< 2 pCi/sw α</div> <div>1.4+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C39</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C40</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Right side
Bottom	<div>Inst reading: 6 cpm α</div> <div>Sample # C45</div> <div>< 2 pCi/sw α</div> <div>3.5+/-1.4 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C44</div> <div>< 2 pCi/sw α</div> <div>1.9+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 4 cpm α</div> <div>Sample # C43</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 2 cpm α</div> <div>Sample # C42</div> <div>< 2 pCi/sw α</div> <div>1.7+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C41</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	
Bottom	<div>Inst reading: 8 cpm α</div> <div>Sample # C60</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C59</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C58</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 4 cpm α</div> <div>Sample # C57</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C56</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Door
Middle	<div>Inst reading: 12 cpm α</div> <div>Sample # 51</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 4 cpm α</div> <div>Sample # C52</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C53</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 6 cpm α</div> <div>Sample # C54</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 7 cpm α</div> <div>Sample # C55</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Left side
Top	<div>Inst reading: 12 cpm α</div> <div>Sample # C50</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 20 cpm α</div> <div>Sample # C49</div> <div>1.5+/-0.9 pCi/sw α</div> <div>2.4+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 18 cpm α</div> <div>Sample # C48</div> <div>< 2 pCi/sw α</div> <div>1.9+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C47</div> <div>2.4+/-1.2 pCi/sw α</div> <div>3.7+/-1.4 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 19 cpm α</div> <div>Sample # C46</div> <div>< 2 pCi/sw α</div> <div>2.2+/-1.2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	

Building 404 Swipe Sample Log

Date: 4-May-09

Technician: Fyffe

Instrument: 4389-SN05022

Background: 21 cpm α

Room Number: 3

Top	Inst reading: 7 cpm α Sample # C80 < 2 pCi/sw α 21.+/-.1.2 pCi/sw β < 50 pCi/sw λ	Inst reading: 11 cpm α Sample # C79 < 2 pCi/sw α 1.3+/-.1.0 pCi/sw β < 50 pCi/sw λ	Inst reading: 13 cpm α Sample # C78 < 2 cpm α 2.5+/-.1.3 cpm β < 50 cpm λ	Inst reading: 9 cpm α Sample # C77 < 2 pCi/sw α 1.7+/-.1.1 pCi/sw β < 50 pCi/sw λ	Inst reading: 18 cpm α Sample # C76 < 2 pCi/sw α 1.5+/-.1.1 pCi/sw β < 50 pCi/sw λ
	Inst reading: 7 cpm α Sample # C81 < 2 pCi/sw α 1.7+/-.1.1 pCi/sw β < 50 pCi/sw λ	Inst reading: 4 cpm α Sample # C82 < 2 pCi/sw α 1.2+/-.1.0 pCi/sw β < 50 pCi/sw λ	Inst reading: 11 cpm α Sample # C83 < 2 pCi/sw α < 2 pCi/sw β < 50 pCi/sw λ	Inst reading: 19 cpm α Sample # C84 < 2 pCi/sw α < 2 pCi/sw β < 50 pCi/sw λ	Inst reading: 9 cpm α Sample # C85 < 2 pCi/sw α < 2 pCi/sw β < 50 pCi/sw λ
	Inst reading: 3 cpm α Sample # C86 < 2 pCi/sw α 2.5+/-.1.3 pCi/sw β < 50 pCi/sw λ	Inst reading: 10 cpm α Sample # C87 1.4+/-.0.9 pCi/sw α 2.1+/-.1.2 pCi/sw β < 50 pCi/sw λ	Inst reading: 17 cpm α Sample # C88 < 2 pCi/sw α 1.2+/-.1.0 pCi/sw β < 50 pCi/sw λ	Inst reading: 16 cpm α Sample # C89 < 2 pCi/sw α 1.4+/-.1.1 pCi/sw β < 50 pCi/sw λ	Inst reading: 17 cpm α Sample # C90 < 2 pCi/sw α 4.6+/-.1.6 pCi/sw β < 50 pCi/sw λ
Right side					
Bottom	Inst reading: 5 cpm α Sample # C75 1.5+/-.0.9 pCi/sw α 3.0+/-.1.3 pCi/sw β < 50 pCi/sw λ	Inst reading: 11 cpm α Sample # C74 < 2 pCi/sw α 1.5+/-.1.1 pCi/sw β < 50 pCi/sw λ	Inst reading: 13 cpm α Sample # C73 < 2 pCi/sw α 3.4+/-.1.4 pCi/sw β < 50 pCi/sw λ	Inst reading: 17 cpm α Sample # C72 1.8+/-.1.0 pCi/sw α 3.2+/-.1.4 pCi/sw β < 50 pCi/sw λ	Inst reading: 14 cpm α Sample # C71 1.8+/-.1.0 pCi/sw α 21.+/-.1.2 pCi/sw β < 50 pCi/sw λ
	Inst reading: 16 cpm α Sample # C66 < 2 pCi/sw α 1.8+/-.1.1 pCi/sw β < 50 pCi/sw λ	Inst reading: 17 cpm α Sample # C67 < 2 pCi/sw α 1.9+/-.1.2 pCi/sw β < 50 pCi/sw λ	Inst reading: 13 cpm α Sample # C68 < 2 pCi/sw α 2.8+/-.1.3 pCi/sw β < 50 pCi/sw λ	Inst reading: 9 cpm α Sample # C69 1.9+/-.1.0 pCi/sw α 1.9+/-.1.2 pCi/sw β < 50 pCi/sw λ	Inst reading: 24 cpm α Sample # C70 < 2 pCi/sw α 2.6+/-.1.2 pCi/sw β < 50 pCi/sw λ
	Inst reading: 11 cpm α Sample # C65 < 2 pCi/sw α < 2 pCi/sw β < 50 pCi/sw λ	Inst reading: 18 cpm α Sample # C64 1.8+/-.1.0 pCi/sw α 3.8+/-.1.5 pCi/sw β < 50 pCi/sw λ	Inst reading: 16 cpm α Sample # C63 < 2 pCi/sw α 2.8+/-.1.3 pCi/sw β < 50 pCi/sw λ	Inst reading: 21 cpm α Sample # C62 < 2 pCi/sw α 3.6+/-.1.4 pCi/sw β < 50 pCi/sw λ	Inst reading: 16 cpm α Sample # C61 < 2 pCi/sw α 1.1+/-.1.0 pCi/sw β < 50 pCi/sw λ
Left side					
Door					

Building 404 Swipe Sample Log

Date: 4-May-09

Technician: Fyffe

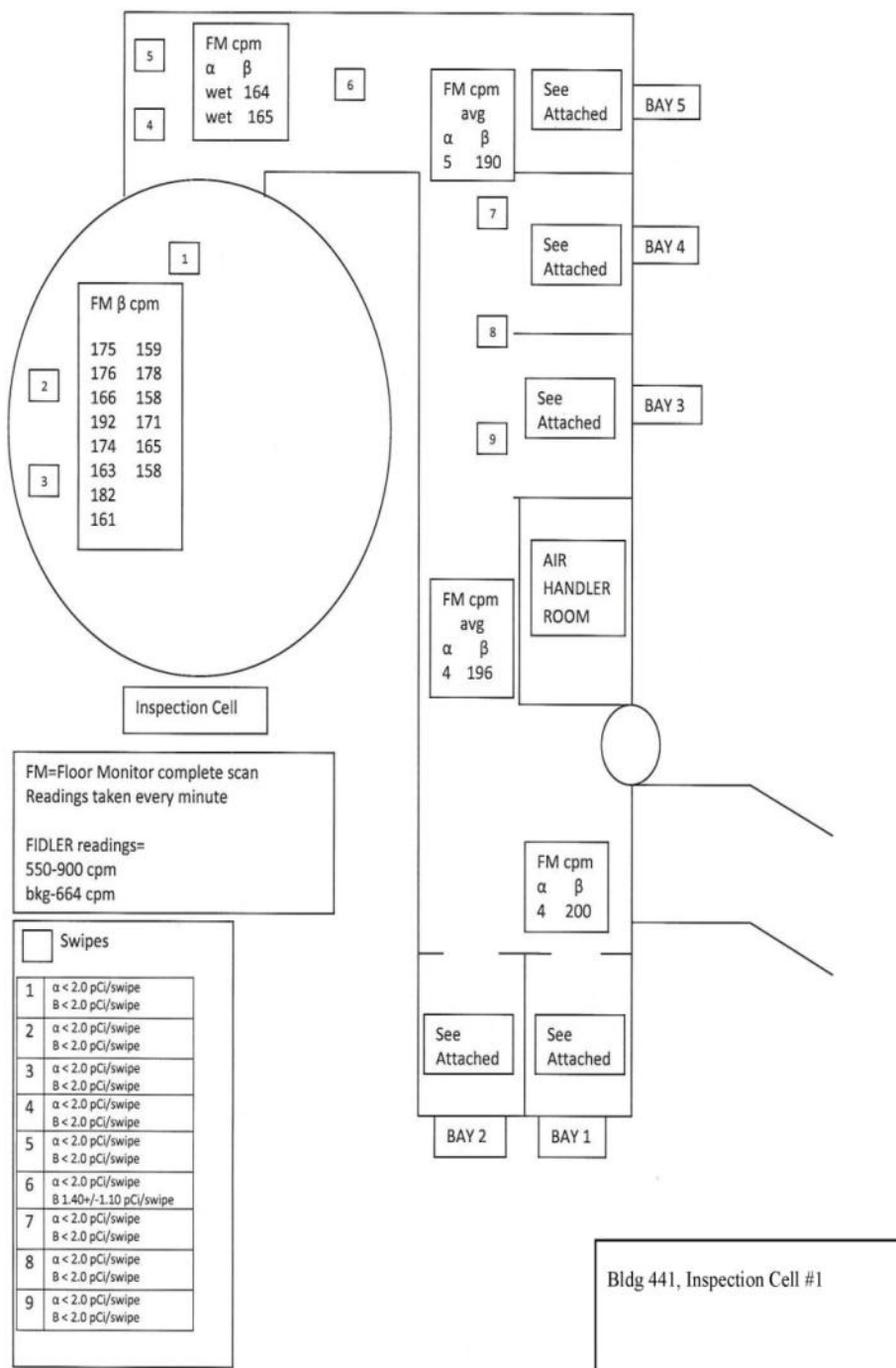
Instrument: 4389-SN05591

Background: 21 cpm α

Room Number: 4

Top	<div>Inst reading: 19 cpm α</div> <div>Sample # C110</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C109</div> <div>< 2 pCi/sw α</div> <div>1.4+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 7 cpm α</div> <div>Sample # C108</div> <div>< 2 cpm α</div> <div>< 2 cpm β</div> <div>< 50 cpm λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C107</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 13 cpm α</div> <div>Sample # C106</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	
Middle	<div>Inst reading: 5 cpm α</div> <div>Sample # C111</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C112</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 10 cpm α</div> <div>Sample # C113</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 5 cpm α</div> <div>Sample # C114</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 16 cpm α</div> <div>Sample # C115</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Right side
Bottom	<div>Inst reading: 10 cpm α</div> <div>Sample # C120</div> <div>1.5+/-0.9 pCi/sw α</div> <div>1.7+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 20 cpm α</div> <div>Sample # C119</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 9 cpm α</div> <div>Sample # C118</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C117</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 16 cpm α</div> <div>Sample # C116</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	

Bottom	<div>Inst reading: 8 cpm α</div> <div>Sample # C105</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C104</div> <div>< 2 pCi/sw α</div> <div>1.4+/-1.1 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C103</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 10 cpm α</div> <div>Sample # C102</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 16 cpm α</div> <div>Sample # C101</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Door
Middle	<div>Inst reading: 16 cpm α</div> <div>Sample # C96</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 14 cpm α</div> <div>Sample # C97</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 18 cpm α</div> <div>Sample # C98</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 6 cpm α</div> <div>Sample # C99</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 13 cpm α</div> <div>Sample # C100</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	Left side
Top	<div>Inst reading: 20 cpm α</div> <div>Sample # C95</div> <div>< 2 pCi/sw α</div> <div>1.1+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C94</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 12 cpm α</div> <div>Sample # C93</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 8 cpm α</div> <div>Sample # C92</div> <div>< 2 pCi/sw α</div> <div>< 2 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	<div>Inst reading: 9 cpm α</div> <div>Sample # C91</div> <div>< 2 pCi/sw α</div> <div>1.3+/-1.0 pCi/sw β</div> <div>< 50 pCi/sw λ</div>	



BAY 1

α 1 cpm	α 8 cpm
β 144 cpm	β 104 cpm
α 4 cpm	α 6 cpm
β 91 cpm	β 121 cpm
α 7 cpm	α 5 cpm
β 135 cpm	β 118 cpm
α 4 cpm	α 6 cpm
β 120 cpm	β 127 cpm

DOOR

BAY 3

α 1 cpm	α 1 cpm
β 102 cpm	β 112 cpm
α 2 cpm	α 3 cpm
β 95 cpm	β 90 cpm
α 3 cpm	α 5 cpm
β 106 cpm	β 112 cpm
α 5 cpm	α 5 cpm
β 103 cpm	β 109 cpm

DOOR

BAY 5

α 1 cpm	α 5 cpm
β 154 cpm	β 211 cpm
α 2 cpm	α 2 cpm
β 174 cpm	β 170 cpm
α 0 cpm	α 2 cpm
β 107 cpm	β 194 cpm
α 5 cpm	α 6 cpm
β 108 cpm	β 187 cpm

DOOR

α < 2.0 pCi/swipe
β 1.50+/-1.10 pCi/swipe
α < 2.0 pCi/swipe
β 1.10+/-1.00 pCi/swipe
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe

BAY 2

α 3 cpm	α 5 cpm
β 105 cpm	β 180 cpm
α 2 cpm	α 1 cpm
β 176 cpm	β 181 cpm
α 1 cpm	α 1 cpm
β 175 cpm	β 218 cpm
α 5 cpm	α 6 cpm
β 204 cpm	β 195 cpm

DOOR

BAY 4

α 2 cpm	α 2 cpm
β 199 cpm	β 109 cpm
α 7 cpm	α 2 cpm
β 104 cpm	β 122 cpm
α 1 cpm	α 2 cpm
β 107 cpm	β 108 cpm
α 3 cpm	α 0 cpm
β 118 cpm	β 96 cpm

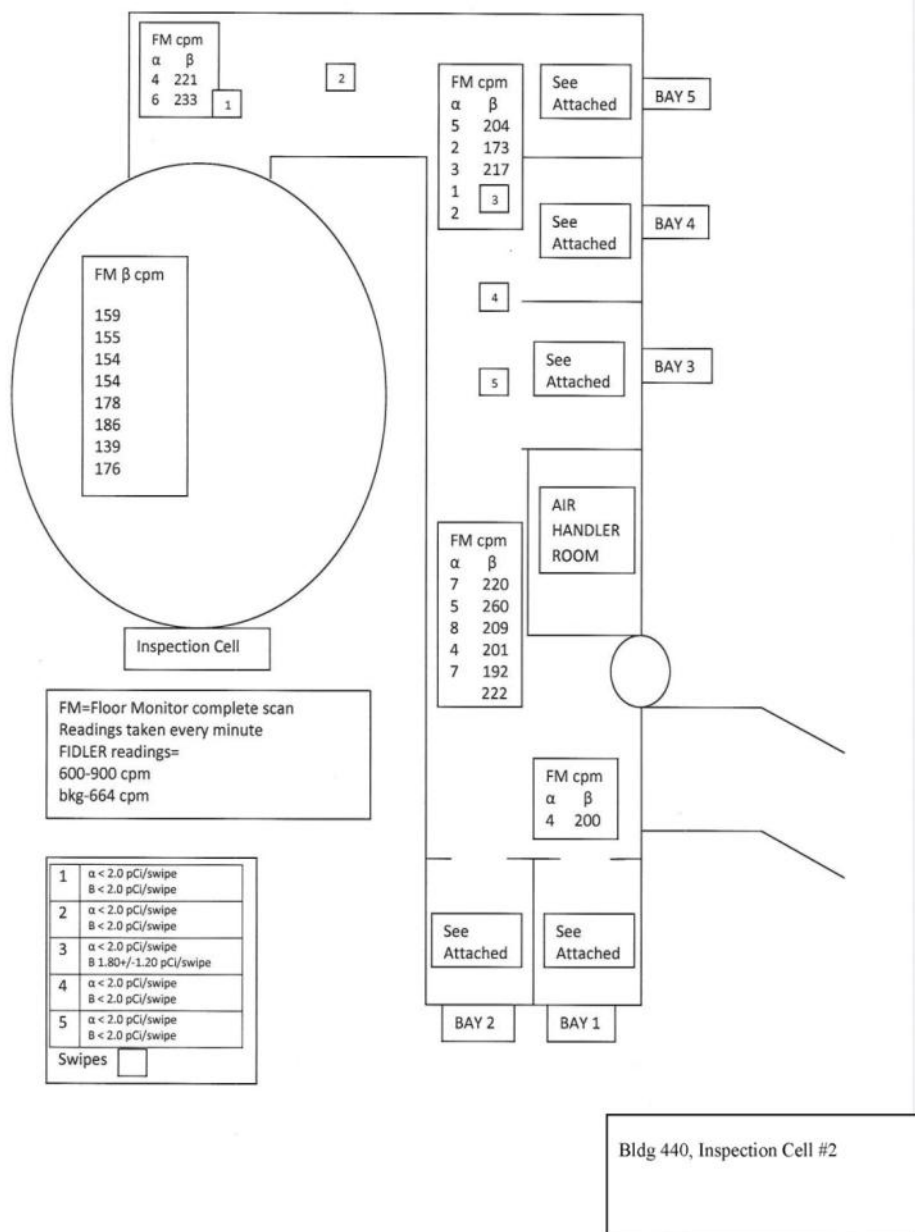
DOOR

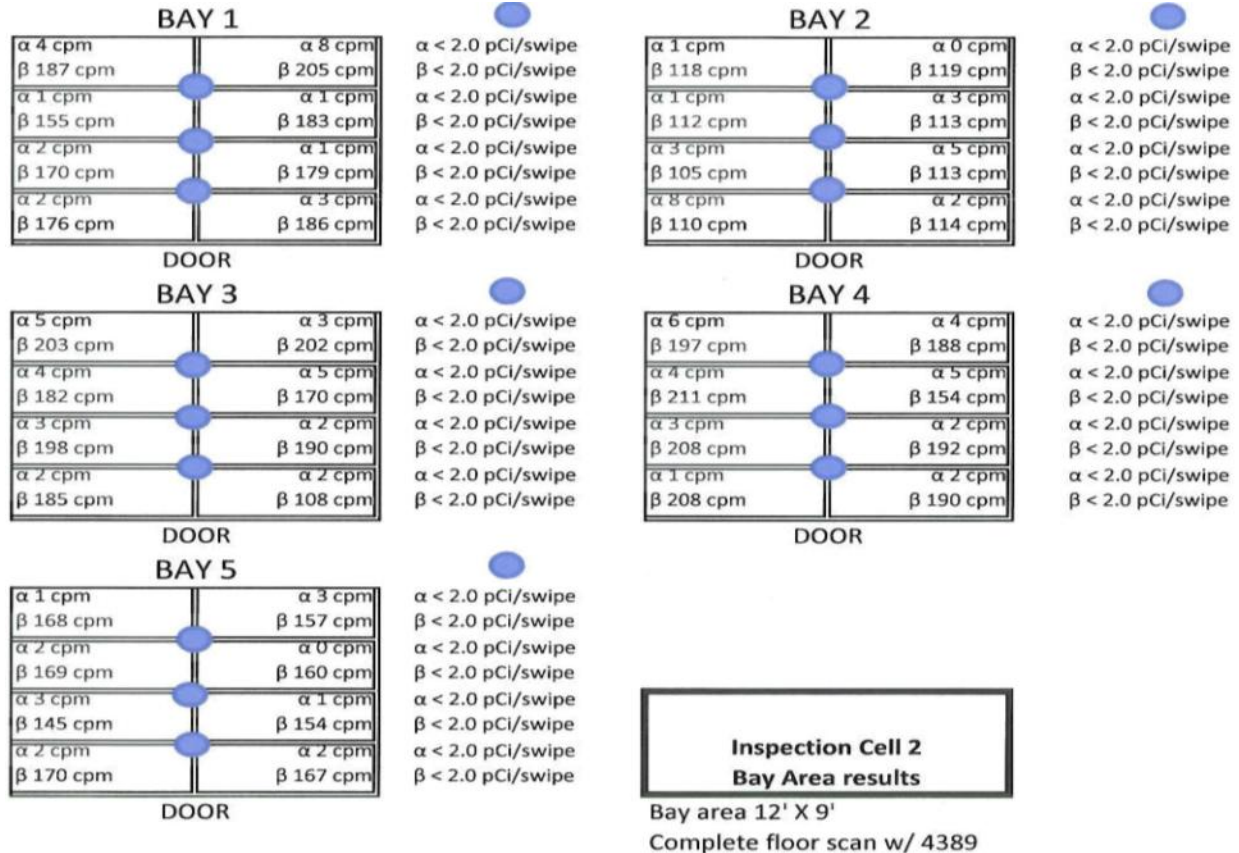
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe

α < 2.0 pCi/swipe
β < 2.0 pCi/swipe
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe
α < 2.0 pCi/swipe
β < 2.0 pCi/swipe

Inspection Cell 1
Bay Area results

Bay area 12' X 9'
Complete floor scan w/ 4389





Attachment 5

Acceptable Contamination Levels

Table 1: Acceptable Surface Contamination Levels, Regulatory Guide 1.86, *Termination of Operating Licenses for Nuclear Reactors*, U.S. Atomic Energy Commission, June 1974*

Nuclide ^a	Acceptable Contamination Levels (dpm/100 cm ²)		
	Average ^{b,c,d}	Maximum ^{b,d,e}	Removable ^{b,f}
U-nat, ²³⁵ U, ²³⁸ U & associated decay products	5,000 (α)	15,000 (α)	1,000 (α)
Transuranics, ²²⁶ Ra, ²²⁸ Ra, ²³⁰ Th, ²²⁸ Th, ²³¹ Pa, ²²⁷ Ac, ¹²⁵ I, ¹²⁹ I	100	300	20
Th-nat, ²³² Th, ⁹⁰ Sr, ²²³ Ra, ²²⁴ Ra, ²³² U, ¹²⁶ I, ¹³¹ I, ¹³³ I	1,000	3,000	200
β-γ emitters (nuclides with decay modes other than α-emission or SF) except ⁹⁰ Sr and others noted above	5,000 (β-γ)	15,000 (β-γ)	1,000 (β-γ)

Notes:

*Bracketed portion of notes was extracted from AFI 48-148, Table A4.2, 2001, and were not part of the original document.

^aWhere surface contamination by both α- and β-γ-emitting nuclides exists, the limits established for α- and β-γ-emitting nuclides should apply independently. [The values apply to radioactive contamination deposited on, but not incorporated into the interior of, the contaminated item.]

^bAs used in this table, dpm means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^cMeasurements of average contamination should not be averaged over more than 1 m². For objects of less surface area, the average should be derived for each such object.

^d[The average and maximum radiation levels associated with surface contamination resulting from β-γ-emitting nuclides should not exceed 0.2 mrad/h @ 1 cm and 1.0 mrad/h @ 1 cm, respectively, measured through 7 mg/cm² of total absorber.]

^eThe maximum contamination level applies to an area of not more than 100 cm².

^fThe amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent material, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. [The use of dry material may not be appropriate for tritium.] When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire area should be wiped. [Except for transuranics and ²²⁸Ra, ²²⁷Ac, ²²⁸Th, ²³⁰Th, ²³¹Pa, and α-emitters, it is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination (i.e., removable and fixed) are within the limits for removable contamination.]

Attachment 6

Site Photographs

Building 402





Building 403





Building 404



